

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 2 of 10

Attorney's Docket No.: 09215-005001

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1 - 6. (Cancelled)

7. (Currently amended) A method of evaluating a set of identical electronic components prior to installing the components into electronic assemblies, the method comprising:  
combining an associated environmental condition recorder with a set of electronic components for travel with the set;  
collecting data with the environmental condition recorder, the data being indicative of an environmental condition associated with the electronic components during consecutive periods of time prior to installing the electronic components from the set into the electronic assemblies by reflow;  
storing the collected data in a memory storage unit within the environmental condition recorder;  
evaluating whether the electronic components are suitable for exposure to reflow conditions based on an estimated cumulative effect of exposure to the environmental condition based on the stored data; and then, for electronic components found suitable for exposure to reflow conditions,  
installing the suitable electronic components into electronic assemblies using reflow.

8. (Original) The method of claim 7 wherein collecting the data indicative of the environmental condition comprises sensing atmospheric moisture content.

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 3 of 10

Attorney's Docket No.: 09215-005001

9. (Original) The method of claim 8 wherein sensing atmospheric moisture content comprises measuring ambient temperature.
10. (Original) The method of claim 8 wherein sensing atmospheric moisture content comprises measuring relative humidity.
11. (Original) The method of claim 7 wherein storing the collected data comprises organizing the collected data into a graphical format plotted against a time axis.
12. (Previously amended) The method of claim 7 wherein evaluating whether the electronic components are suitable for exposure to reflow conditions comprises estimating a remaining floor life associated with the electronic components.
13. (Original) The method of claim 12 wherein estimating the remaining floor life comprises identifying a reference time associated with a reference remaining floor life value.
14. (Original) The method of claim 13 wherein the reference time is identified as a time that collecting data indicative of the environmental condition was initiated.
15. (Original) The method of claim 13 wherein the reference time is identified based on a time that a baking event occurred.
16. (Original) The method of claim 13 wherein the reference time is identified based on a time that the electronic components experienced a prolonged exposure to a temperature greater than a preset temperature.
17. (Original) The method of claim 13 wherein the reference time is identified as a time that a final set of data was collected.

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 4 of 10

Attorney's Docket No.: 09215-005001

18. (Original) The method of claim 12 wherein estimating the remaining floor life comprises calculating a floor life reduction value associated with each consecutive period of time.
19. (Original) The method of claim 18 wherein estimating the remaining floor life further comprises determining a total remaining floor life value based on the floor life reduction values associated with each consecutive period of time.
20. (Original) The method of claim 12 wherein the remaining floor life is estimated based on an associated reference temperature and relative humidity.
21. (Original) The method of claim 12 wherein estimating the remaining floor life comprises accounting for a moisture sensitivity level associated with the set of electronic components.
22. (Original) The method of claim 12 wherein estimating the remaining floor life comprises accounting for a body thickness associated with the electronic components.
23. (Previously amended) The method of claim 7 wherein evaluating whether the electronic components are suitable for exposure to reflow conditions comprises integrating a set of sensed moisture content values over time to calculate a cumulative environmental exposure factor.
24. (Previously amended) The method of claim 7 wherein evaluating whether the electronic components are suitable for exposure to reflow conditions comprises comparing the estimated cumulative effect of exposure to the environmental condition to a predefined acceptance criteria to determine an estimated reliability factor.
25. (Previously amended) The method of claim 7 wherein evaluating whether the electronic components are suitable for exposure to reflow conditions comprises comparing the estimated

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 5 of 10

Attorney's Docket No.: 09215-005001

cumulative effect with a predefined acceptability criteria to determine a go/no-go type of recommendation.

26 - 57. (Cancelled)

58. (Currently amended) An article comprising a computer-readable medium that stores computer executable instructions for causing a computer system to:

receive a set of time-based data from an environmental condition recorder combined with a set of uninstalled electronic components for travel with the set, the data representing ambient moisture content exposure for the set of uninstalled electronic components and having been electronically collected by the environmental condition recorder over time;

evaluate whether the set of electronic components are suitable for exposure to reflow conditions during installation based on a cumulative effect of moisture exposure derived from the time-based data; and

output information indicating suitability of the electronic components for exposure to reflow conditions during installation into electronic assemblies.

59. (Original) The computer-readable medium of claim 58 further comprising computer executable instructions for causing the computer system to estimate a total remaining floor life associated with the set of electronic components based on the time-based data.

60. (Original) The computer-readable medium of claim 58 further comprising computer executable instructions for causing the computer system to identify a reference time in the time-based data associated with a reference floor life.

61. (Original) The computer-readable medium of claim 58 further comprising computer executable instructions for causing the computer system to calculate a reduction in floor life associated with each of multiple, successive periods of time represented by the time-based data.

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 6 of 10

Attorney's Docket No.: 09215-005001

62. (Original) The computer-readable medium of claim 61 further comprising computer executable instructions for causing the computer system to calculate a cumulative total remaining floor life based on the reductions in floor life associated with each of the periods of time.

63. (Original) The computer-readable medium of claim 58 further comprising computer executable instructions for causing the computer system to calculate an integral function of sensed ambient moisture content over time to identify an environmental exposure factor.

64. (Original) The computer-readable medium of claim 63 further comprising computer executable instructions for causing the computer system to compare the calculated environmental exposure factor to a predetermined benchmark value representative of an ideal environmental exposure factor.

65. (New) The method of claim 7 wherein the environmental condition recorder comprises:  
a sensing element responsive to an environmental condition;  
a memory storage unit in electronic communication with the sensing element and adapted to store environmental condition data sensed by the sensing element; and  
a processing unit in electronic communication with the sensing element and the memory storage unit.

66. (New) The method of claim 65 wherein the processing unit is adapted to evaluate whether the electronic components of the set are suitable for exposure to reflow conditions.

67. (New) The method of claim 65 wherein the processing unit is adapted to estimate a remaining floor life associated with the electronic components of the set.

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 7 of 10

Attorney's Docket No.: 09215-005001

68. (New) The method of claim 65 wherein the processing unit is adapted to identify a reference time associated with a reference remaining floor life value based on the stored data.

69. (New) The method of claim 68 wherein the processing unit is adapted to identify the reference time as a time that the environmental condition recorder began collecting and storing environmental condition data associated with the set of electronic components.

70. (New) The method of claim 68 wherein the processing unit is adapted to identify the reference time as a time that the set of electronic components were exposed to a baking event, based on the stored data.

71. (New) The method of claim 68 wherein the processing unit is adapted to identify the reference time as a time, represented by the stored data, that the electronic components of the set experienced a prolonged exposure to a temperature greater than a preset temperature.

72. (New) The method of claim 65 wherein the processing unit is adapted to calculate a floor life reduction value associated with each of the consecutive periods of time, based on the stored data.

73. (New) The method of claim 72 wherein the processing unit is adapted to determine a total remaining floor life value based on the calculated floor life reduction values associated with each of the consecutive periods of time.

74. (New) The method of claim 72 wherein the processing unit is adapted to account for a moisture sensitivity level associated with the set of electronic components in calculating the floor life reduction values associated with each of the consecutive periods of time.

Applicant : Yuen-Foo Michael Kou  
Serial No. : 09/924,279  
Filed : August 8, 2001  
Page : 8 of 10

Attorney's Docket No.: 09215-005001

75. (New) The method of claim 72 wherein the processing unit is adapted to account for a body thickness associated with the electronic components of the set, in calculating the floor life reduction values associated with each of the consecutive periods of time.

76. (New) The method of claim 65 wherein the processing unit is adapted to integrate as a function of time the data stored in the memory storage unit to calculate a cumulative environmental exposure factor.

77. (New) The method of claim 76 wherein the processing unit is adapted to compare the calculated cumulative environmental exposure factor to a predefined acceptance criteria, stored in the memory storage unit, to determine an estimated reliability factor.